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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,267	10/01/2001	Kiyoaki Murai	110750	4174

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EXAMINER	
NGUYEN, CHANH DUY	
ART UNIT	**PAPER NUMBER**
2675	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/966,267	MURAI ET AL.	
	Examiner	Art Unit	
	Chanh Nguyen	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6-17* is/are allowed.

6)☒ Claim(s) *1-5 and 18-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on September 7, 2004 has been entered and considered by examiner.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-5 and 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsushiro (U.S. Patent No. 6,201,612).

With regard to claim 1, Matsushiro et al. teaches an image processing method, comprising: inputting data indicating a grayscale of an individual pixel (figure 5, "MULTI-LEVEL IMAGE" , into item 7); converting said input data into grayscale data which specifies a grayscale of an image output apparatus according to display capacity of the

image output apparatus (figure 5 , item 8, SELECTOR picks item 21 or item 11 based on predetermined characteristics SEE column 10 lines 3-27); and when said input data of the individual pixel corresponds to a specific grayscale value which causes a defect in an output of said image output apparatus (ABSTRACT and column 2, lines 17-18 also see column 10 lines 3-27) converting at least part of said input data of the individual pixel into grayscale data which specifies a grayscale value other than the specific gray scale value, and supplying the converted grayscale data of the individual pixel to said image output apparatus (figure 5, the selector picks item 21 (grayscale value other) or item 11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 "Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" , and also see column 1, lines 24-29 though the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 , lines 10-16 "An object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed with smooth expression of gray levels.").

With regard to claim 2, Matsushiro et al. teaches an image processing method according to claim 1, said converting further comprising a color reduction processing that reduces the number of levels which is indicatable by said input data into the number of levels which is indicatable by said grayscale data (column 1, lines 5-24).

With regard to claim 3, Matsushiro was shown above in claims 1 and 2 to teach most of the limitations and with further regard Matsushiro teaches the feature, çç said color reduction processing being pseudo-halftone processing that distributes said grayscale data so that said grayscale data does not concentrate on the same value (Inherent feature of bi-level error diffusion to avoid concentrating on one value so ms to prevent patterns forming).

With regard to claim 4, Matsushiro was shown above in claims 1 and 2 to teach most of the limitations and with further regard Matsushiro teaches the feature, "said color reduction processing converting all the input data corresponding to said specific grayscale value into grayscale data which specifies one of grayscale values adjacent to said specific grayscale value" (see column 2 , lines 10-16 "An object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed with smooth expression of pay levels." , and still even further the word "adjacent" is a broad concept whereby any grayscale value other than the specific grayscale value is inherently adjacent to it .

With regard to claim 5. Matsushiro et al. teaches an image processing method, comprising: inputting data of an individual pixel which indicates a grayscale of a pixel (figure 5, EGMULTI-LEVEL IMAGE" , into item 7); and converting said input data of the individual pixel into grayscale data which specifies a grayscale of an image output apparatus by reducing the number of levels of said input data of the individual pixel according to a display capacity of the image output apparatus (figure 5, item 8,

SELECTOR column 1, lines 5-1%;and by performing pseudo-halftone processing that displays a halftone, in which, when said input data of the individual pixel corresponds to a specific grayscale value which causes a defect in an output of said image output apparatus (ABSTRACT), at least part of said input data of the individual pixel is converted into grayscale data which specifies one of grayscale values adjacent to said specific grayscale value of the individual pixel, and supplying the converted data of the individual pixel to said image output apparatus (figure 5, the selector picks item 21 (grayscale value other) or item 11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 "Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" , and also see column 1, lines 24-29 "among the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 , lines 10-16 "An object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed with smooth expression of gray levels." , and still even further the word "adjacent" is a broad concept whereby any grayscale value other than the specific grayscale value is inherently adjacent to it .

With regard to claim 18, Matsushiro et al. teaches an image processing apparatus, comprising: a conversion circuit that converts input data indicating a grayscale of an individual pixel into grayscale data which specifies a grayscale of an image output apparatus according to a display capacity of the image output apparatus

(figure 5), wherein, when said input data of the individual pixel corresponds to a specific grayscale value which causes a defect in an output of said image output apparatus (abstract), said conversion circuit converts at least part of said input data of the individual pixel into grayscale data which specifies a grayscale value other than the specifies grayscale value, and supplies the converted grayscale data of the individual pixel to said image output apparatus (figure 5, the selector picks item 21 (grayscale value other) or item11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 "Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" and also see column 1, lines 24-29 among the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 , lines 10-16 "An object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be â bi-level image, combining high processing speed with smooth expression of cay levels.").

With regard to claim 19, Matsushiro et al. teaches an image processing apparatus, comprising: a conversion circuit that converts input data indicating a grayscale of an individual pixel into grayscale data which specifies a grayscale of an image output apparatus by reducing the number of levels of said input data according to a display capacity of the image output apparatus (figure 5), and by performing pseudo-halftone processing for displaying a halftone, wherein said conversion circuit converts at lesst part of the data of the individual pix4l corresponding to a specific grayscale value

which causes a defect in an output of said image output apparatus into grayscale data which specifies one of grayscale values adjacent to said specific grayscale value, and supplies the converted data of the individual pixel to said image output apparatus (figure 5, the selector picks item 21 or item 11 then output BI-LEVEL IMAGE). figure 5, the selector picks item 21 (grayscale value other) or item 11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" , and also see column 1, lines 24-29 "among the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 , lines 10-16 "An object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed with smooth expression of gray levels." and still even further the word adjacent" is a broad concept whereby any grayscale value other than the specific grayscale value is inherently adjacent to it.

With regard to claim 20, Matsushiro et al. teaches an electronic device, comprising: an image processing apparatus and an image output apparatus (figure 5), said image processing apparatus converting input data indicating a grayscale of an individual pixel into grayscale data which specifies a grayscale of said image output apparatus by reducing the number of levels of said input data according to a display capacity of the image output apparatus and by performing pseudo-halftone processing for displaying a halftone (abstract, and column 1, lines 6-24), said image processing

apparatus comprising a conversion circuit that converts at least part of the input data of the individual pixel corresponding to a specific grayscale value which causes a defect in an output of said image output apparatus (abstract) into the grayscale data which specifies one of grayscale values adjacent to said specific grayscale value, and said image forming apparatus outputting an image according to the grayscale data of the individual pixel converted by said image processing apparatus (figure 5, the selector picks item 21 or item 11 then output BI-LEVEL IMAGE). (figure 5, the selector picks item 21 (grayscale value other) or item 11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 "Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" , and also see column 1, lines 24-29 "among the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 , lines 10-16 ççAn object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed with smooth expression of gray levels." and still even further the word "adjacent" is a broad concept whereby any grayscale value other than the specific grayscale value is inherently adjacent to it)

With regard to claim 21 Matsushiro et al. teaches an image processing program which causes a computer (column 2, lines 50-55) that supplies grayscale data which specifies a grayscale of an image output apparatus to said image output apparatus to function as device that indicates a grayscale of an individual pixel into said grayscale

data by reducing the number of levels of the input data according to a display capacity of the image output apparatus and by performing pseudo-halftone processing for displaying a halftone (abstract, column 1, lines 1-25), wherein the device converts at least part of the data of the individual pixel corresponding to a specific grayscale value which causes a defect in an output of said image output apparatus into the grayscale data which specifies one of grayscale values adjacent to said specific grayscale value, and supplies the converted grayscale data of the individual pixel to said image output apparatus (figure 5, the selector picks item 21 or item 11 then output BI-LEVEL IMAGE). figure 5, the selector picks item 21 (grayscale value other) or item 11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 "Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" , and also see column 1, lines 24-29 among the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 , lines 10-16 "An object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed w1t11 smooth expression of ray levels." and still even further the word "adjacent" is a broad concept whereby any grayscale value other than the specific grayscale value is inherently adjacent to it).

With regard to claim 22, Matsushiro et al. teaches a computer-readable recording medium on which an image processing program is recorded (column 2, lines 50-55), said image processing program causing a computer for supplying grayscale

data which specifies a grayscale of an image output apparatus to said image output apparatus to function as device that indicates a grayscale of an individual pixel into said grayscale data by reducing the number of levels of the input data according to a display capacity of the image output apparatus and by performing pseudo-halftone processing for displaying a halftone (column 1, lines 5-25), wherein the device converts at least part of the data of the individual pixel corresponding to a specific grayscale value which causes a defect in an output of said image output apparatus into the grayscale data which specifies one of grayscale values adjacent to said specific grayscale value, and supplies the scale data of the individual pixel to said image output apparatus figure 5, the selector picks item 21 (grayscale value other) or item 11 (specific grayscale value) then outputs BI-LEVEL IMAGE data, now see column 1, lines 17-18 "Multi-level images are often printed or displayed by bi-level output devices capable of expressing only two levels" , and also see column 1, lines 24-29 among the known techniques for converting multi-level images to bi-level images are halftone patterns, dithering, error diffusion, and mean error minimization", and still further see column 2 lines 10-16 "an object of the present invention is to provide an image processing apparatus, method, and computer program for converting a multi-level image to be a bi-level image, combining high processing speed with smooth expression of gray levels." and still even further the word "adjacent" is a broad concept whereby any grayscale value other t11a1: the specific grayscale value is inherently adjacent to it).

Allowable Subject Matter

4. Claims 6-17 are allowed.

Response to Arguments

5. Applicant's arguments filed September 7, 2004 have been fully considered but they are not persuasive.

Applicant argues that Matsushiro does not disclose or suggest converting input data into grayscale data which specifies a grayscale of an image output apparatus according to a display capability of the image output apparatus. Examiner disagrees with applicant since Mashushiro clearly teaches that converting multi-level images to be bi-level images are half-tone patterns..." (see column 1, lines 24-29). Thus, it is clear that display capacity is bi-level which is generated from converting multi-level image.

Applicant argues that Matsushlro does not disclose or suggest detecting a defect caused by input data of an individual pixel that corresponds to a specific grayscale value". Examiner disagrees because the abstract states;

"Blocks containing abrupt changes in image content are preferably converted by comparing each picture element individually with a threshold value".

And further Column 4, lines 63-67 states;

"When bi-level quantization is employed, the indicated. portions of the block errors of blocks 2,3,4, and 5 are added to each individual pixel value d(lj) in block 6, and the modified pixel values are compared with respective thresholds to generate bi-level pixel values."

And still further column 5, lines 44-47 states;

The bi-level error diffusion processor 20 comprises a bi-level quantizer 21 that quantizes each pixel in the block to a bi-level output value"

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chanh Nguyen whose telephone number is (703) 308-6603. The examiner can normally be reached on Monday- Friday.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chanh Nguyen
Primary Examiner
Art Unit 2675

C. Nguyen
January 22, 2005